

**FACT SHEET FOR
TRANSALTA CENTRALIA GENERATION LLC
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
(NPDES) PERMIT WA0001546**

Purpose of this Fact Sheet

This fact sheet explains and documents the decisions the Department of Ecology (Ecology) made in drafting the proposed National Pollutant Discharge Elimination System (NPDES) permit for TransAlta Centralia Generation, LLC (TCG).

This fact sheet complies with Section 173-220-060 of the Washington Administrative Code (WAC), which requires Ecology to prepare a draft permit and accompanying fact sheet for public evaluation before issuing an NPDES permit.

Ecology makes the draft permit and fact sheet available for public review and comment at least 30 days before issuing the final permit. Copies of the fact sheet and draft permit for TCG, NPDES permit WA0001546, are available for public review and comment. For more details on preparing and filing comments about these documents, please see **Appendix A - Public Involvement Information**.

David Nicol and Sam Bocook reviewed the draft permit and fact sheet for factual accuracy. Ecology corrected any errors or omissions regarding the facility's location, history, discharges, or receiving water prior to publishing this draft fact sheet for public notice.

After the public comment period closes, Ecology will summarize substantive comments and provide responses to them. Ecology will include the summary and responses to comments in this fact sheet as **Appendix E - Response to Comments**, and publish it when issuing the final NPDES permit. Ecology generally will not revise the rest of the fact sheet. The full document will become part of the legal history contained in the facility's permit file.

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I. Introduction

The Federal Clean Water Act (FCWA, 1972, and later amendments in 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One mechanism for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System (NPDES), administered by the federal Environmental Protection Agency (EPA). The EPA authorized the state of Washington to manage the NPDES permit program in our state. Our state legislature accepted the delegation and assigned the power and duty for conducting NPDES permitting and enforcement to Ecology. The Legislature defined Ecology's authority and obligations for the wastewater discharge permit program in 90.48 RCW (Revised Code of Washington).

The following regulations apply to industrial NPDES permits:

- Procedures Ecology follows for issuing NPDES permits (chapter 173-220 WAC)
- Water quality criteria for surface waters (chapter 173-201A WAC)
- Water quality criteria for ground waters (chapter 173-200 WAC)
- Whole effluent toxicity testing and limits (chapter 173-205 WAC)
- Sediment management standards (chapter 173-204 WAC)
- Submission of plans and reports for construction of wastewater facilities (chapter 173-240 WAC)

These rules require any industrial facility owner/operator to obtain an NPDES permit before discharging wastewater to state waters. They also help define the basis for limits on each discharge and for performance requirements imposed by the permit.

Under the NPDES permit program and in response to a complete and accepted permit application, Ecology must prepare a draft permit and accompanying fact sheet, and make them available for public review before final issuance. Ecology must also publish an announcement (public notice) telling people where they can read the draft permit, and where to send their comments, during a period of thirty days (WAC 173-220-050). (See **Appendix A-Public Involvement Information** for more detail about the public notice and comment procedures). After the public comment period ends, Ecology may make changes to the draft NPDES permit in response to comment(s). Ecology will summarize the responses to comments and any changes to the permit in **Appendix E**.

II. Background Information

Table 1 General Facility Information

Facility Information	
Applicant:	TransAlta Centralia Generation, LLC
Facility Name and Address	TransAlta Centralia Generation, LLC 913 Big Hanaford Road Centralia, WA 98531
Contact at Facility	Name: David Nicol Telephone #: 360-330-8120
Responsible Official	Name: Robert Nelson Title: Managing Director, US Coal Operations Address: 913 Big Hanaford Road, Centralia, WA 98531 Telephone # 360-330-8208 FAX # 360-330-2367
Industry Type	Electric Power Generation
Categorical Industry	40 CFR Part 423
Type of Treatment	Industrial wastewater treatment: Settling Pond, Lime Precipitation Domestic wastewater treatment: Activated Sludge, Oxidation Ditch and chlorine disinfection
SIC Codes	4911
NAIC Codes	221112
Facility Location (NAD83/WGS84 reference datum)	Latitude: 46.75577 Longitude: -122.85907
Discharge Waterbody Name and Location (NAD83/WGS84 reference datum)	Hanaford Creek Latitude: 46.760547 Longitude: -122.859517

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Permit Status	
Renewal Date of Previous Permit	November 1, 2010
Application for Permit Renewal Submittal Date	March 4, 2014
Date of Ecology Acceptance of Application	March 14, 2014

Inspection Status	
Date of Last Sampling Inspection	November 9, 2011
Date of Last Non-sampling Inspection Date	June 28, 2016

Figure 1 Facility Location Map



A. Facility description

History

TCG, a wholly owned subsidiary of TransAlta Corporation, operates a coal-fired electricity generating power plant located approximately six miles northeast of Centralia, Washington. TCG operations consist of two, 702.5 Megawatt turbine units that are fueled by coal supplied from out of state coal providers located in the Powder River Basin on the Montana/Wyoming border. TCG has operated continuously since 1971 with no significant alteration. Ecology and EPA classify it as a NPDES major facility.

Electricity demand typically peaks in the winter and the plant occasionally shutdowns in the spring and summer when electricity demand is low. TCG uses these periods to maintain the facility. When operating conditions are ideal, the facility generates electricity continuously for months at a time. TCG employs approximately 325 employees. Operations personnel work two 12-hour shifts, other personnel (administrative) work 8-hour shifts on regular Monday through Friday business hours, and maintenance personnel work 10-hour shifts Monday through Thursday.

Cooling Water Intakes

Thousands of industrial facilities use large volumes of water from lakes, rivers, estuaries, or oceans to cool their machinery. Cooling water intake structures (CWIS) can cause adverse environmental impacts by pulling large numbers of fish and shellfish or their eggs into a power plant's or manufacturing facility's cooling system. The organisms may be killed or injured by heat, physical stress, or by chemicals used to clean the cooling system. Larger organisms may be killed or injured when they are trapped against screens at the front of an intake structure (Source: <https://www.epa.gov/cooling-water-intakes>).

Section 316(b) of the Clean Water Act requires EPA to issue regulations on design, construction, and capacity of cooling water intake structures that reflect the best technology available for minimizing adverse environmental impacts. This regulation applies to the facilities that are regulated under the NPDES permits and are designed to withdraw at least 2 million gallons per day with greater than 25 percent of the water withdrawn exclusively used for cooling purposes.

TCG withdraws cooling water from the Skookumchuck River and this intake structure for TCG was installed in 1971. TCG's CWIS was designed to withdraw 34.56 million gallons per day (MGD). The actual intake drawn from the Skookumchuck River stated in the permit application is 26 MGD. TCG stated in their permit renewal application that 70-90 percent of the flow is used exclusively for cooling. Maximum intake velocity is estimated at 0.5 feet per second (fps).

Ecology must ensure that the location, design, construction, and capacity of TCG's cooling water intake structure reflect the best technology available for minimizing adverse environmental impacts. The proposed permit requires TCG to properly operate and maintain existing technologies used to minimize impingement and entrainment and report any significant impingement or entrainment observed. In addition, the proposed permit requires the Permittee to submit an information and compliance report that addresses NPDES permit application requirements for cooling water intake structures found in 40 CFR 122.21(r). Ecology will use this information to do the following:

- assess the potential for impingement and entrainment at the CWIS,
- evaluate the appropriateness of any proposed technologies or mitigation measures, and
- determine any additional requirements to place on the facility in the next permit cycle.

Industrial Processes

TCG generates electrical power by burning coal mined in Montana and Wyoming. TCG utilizes its two boiler units to generate 1,405,000 kilowatts of electrical power per hour, typically totaling between 7,000,000 and 12,000,000 megawatt hours per year. TCG uses approximately 26.0 MGD when operating, of which, approximately 17.250 MGD cools the steam-electric generating process. TCG uses approximately 2.0 MGD for air pollution control in the current Wet Flue Gas Desulfurization (WFGD) (also referred to as scrubber) operations.

TCG draws water for this operation from Skookumchuck River and the treated process water discharges to Hanaford Creek. Domestic sewage is also generated at the TCG and the TransAlta Centralia Mining (TCM) facility adjacent to the power plant. Table 2 summarizes wastewater generation.

Table 2 Wastewater Generation	
Source	Discharge in MGD
Coal pile Runoff	0.5
Stormwater Runoff	0.4
Cooling tower blowdown	1.8
Water plant blowdown	0.3
Boiler blowdown	0.05
FGD blowdown	0.00
Treated Sanitary Effluent from Outfall 002	0.01

Water Treatment

TCG owns and operates its own water treatment plant. Intake water is drawn from the Skookumchuck River at a rate of 26 MGD. The facility pumps intake water to the surge pond (Figure 2), then treats it with filtration, deionization, and reverse osmosis and then uses it for all power plant and potable water demands.

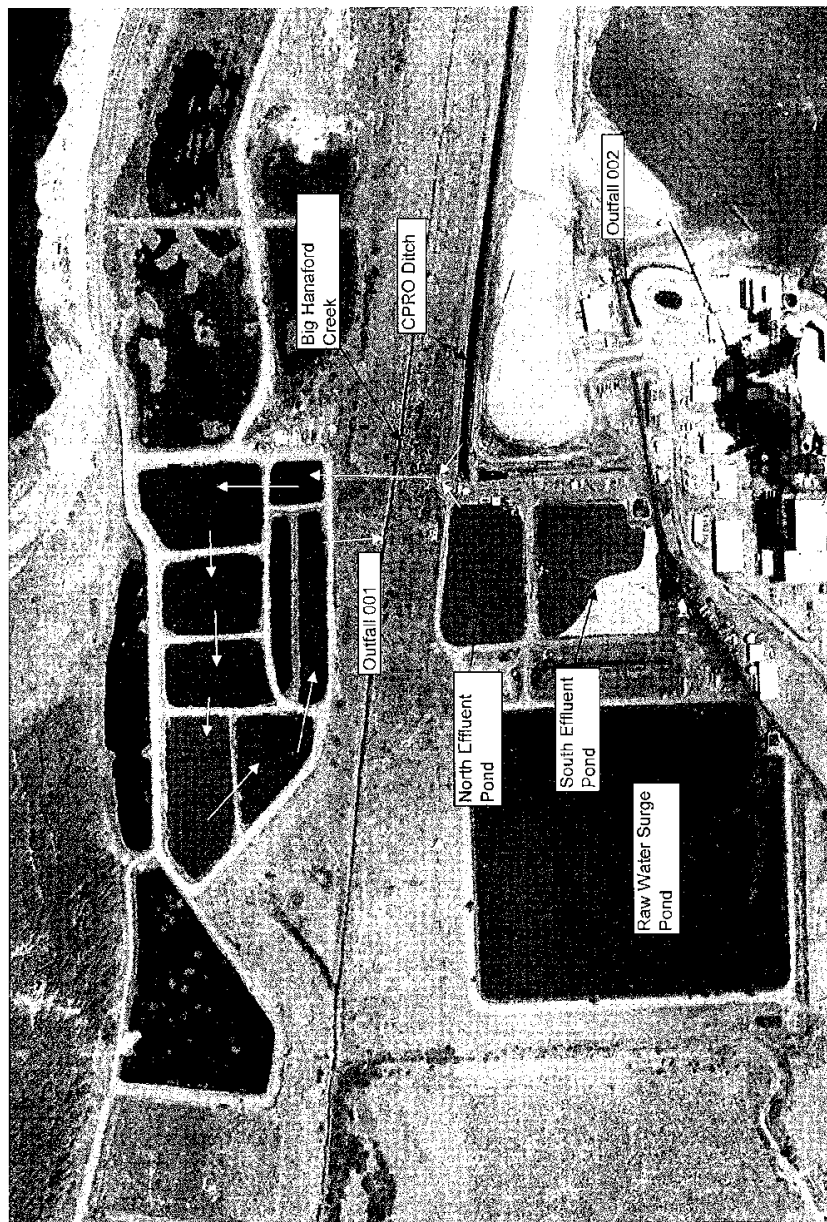


Figure 2: Water supply and wastewater treatment system network

Wastewater Treatment

TCG employs the following treatment to industrial and domestic wastewater before this wastewater is discharged to Hanaford Creek.

1. Flue Gas Desulfurization (FGD) Boron Removal System

The treatment process is divided into two well defined areas: the reaction area and dewatering area. The major equipment in the reaction area are: (1) a packaged lime storage silo and slurry make –up tank; (2) a contact tank; (3) two reaction tanks; (4) a clarifier with overflow stand pipe; and (5) a slurry recycle pump. In the reaction area, lime is used to raise pH level of the scrubber bleed stream in the range of 10.5 to 11.0 S.U. In this pH range, boron and zinc reacts with lime and precipitate as solids. In addition to the boron and zinc, precipitation of essentially all the magnesium and fluoride also occurs.

The precipitated solids are separated from the liquor in a clarifier and transferred to the dewatering area. The overflow from the clarifier is split into two streams. One is returned to the scrubber and the remainder is sent to the bottom ash surge tank, the water source for the bottom ash water systems. The reaction system utilizes Door-OliverEimco's MaxR™ technology. The major equipment in the dewatering area is (1) a paste thickener and; (2) a vacuum belt filter with vacuum pump and filtrate receiver. A portion of the Clarifier recycle flow is pumped to the Deep Cone Paste Thickener, where it is recirculated internally until it is thick enough to dewater into a solid filter cake.

The filter cake is discharged to a haul truck and blended with the gypsum pile for wallboard production. The paste thickener is sized to provide sufficient storage to allow the dewatering equipment to be operated independently of the reaction area equipment. This allows batch operation of the dewatering system and provides maintenance time for minor adjustments and cloth changes on the belt filter. All filtrate, filter belt lube water, cloth wash water and wash down water are routed to a roadway sump that discharges into the ash dewatering bins, back to the Settling then Surge tanks, and back into the bottom ash water systems.

2. Oil Skimmer Pond

TCG uses this 130,000-gallon pond to contain any floating oil or other floating debris from potentially oil contaminated areas. The areas that drain to this pond include:

- Plant floor drains
- Transformer basin drains
- Fuel oil and lube oil storage basin drains
- Compressor building sump pump drains
- Turbine bay sumps

3. South Effluent Pond

The following areas drain to this 5,000,000-gallon pond.

- Circulating water cooling tower blowdown
- Units 1 and 2 boiler drains
- Air pre-heater wash drains
- Cooling tower basin drains
- Circulating water system drains
- Bottom ash system surge tank overflows
- RO reject blowdown

4. North Effluent Pond

This pond has a nominal capacity of 3,000,000 gallons. Water passes through a sub-surface culvert from the south effluent pond to the north effluent pond. TCG reuses the North Effluent Pond water for:

- The plant fire protection system – the primary sources of fire system water are the north effluent pond wastewater pumps and the wastewater booster pumps (which are located on the south side of unit 2).
- Bottom ash system make-up.
- Fly ash bin yard drain wash water.
- Dilution water for the CPRO chemicals.
- Wash-down water.
- Water supply to Fine Coal Recovery, which recovers fine coal from settling ponds for reuse in the plant boilers.
- Secondary source of FGD make-up water.

In the event wastewater levels exceed safe pond capacity, provision is made to dispose of excess wastewater by pumping to the coal pile runoff (CPRO) treatment ponds.

5. Wastewater Pumping Systems

TCG uses the following pumping systems to direct wastewater:

- North Effluent Pond wastewater pumps – Located just outside (south) of the north effluent pond pump house
- Two wastewater pumps rated at 3,000 gallons per minute (gpm) and provide wastewater for most plant processes
- Wastewater Recycle Pump – located at the southeast corner of the final settling pond. The pump is rated at 2,000 gpm and pumps water to Mine Pond 3E or recycles back to the North Effluent Pond.

6. Sewage (Domestic wastewater) Treatment Train

TCG wastewater treatment plant was originally constructed in 1971 and had an initial capacity of 10,000 gallons per day (GPD). In 1985, Plant capacity was increased in 20,000 GPD, when a new extended aeration package secondary treatment plant was installed adjacent to the original package treatment plant. The original package treatment plant has been utilized as a waste solids holding facility since the plant upgrade was completed. The wastewater treatment plant consist of the following main components:

- Influent pump station
- Influent flow splitter box
- Extended aeration package secondary treatment with aeration chamber and clarifier chamber
- Effluent ultrasonic flow meter and V-notch weir at outlet end of original package plant
- Oxidation pond
- Chlorination at outlet of oxidation pond
- Chlorine contact chamber
- Open pipe discharge to ditch

Effluent from the chlorine contact chamber enters the CPRO ditch and flows to the series of CPRO ponds before final discharge into Hanaford Creek. The applicable effluent limits are applied to the discharge at the CPRO ditch.

7. CPRO Operation

TCG contains runoff from the coal storage area within a system of dikes and directs it through a series of ponds for treatment to remove suspended solids before discharge into Hanaford Creek. In addition to water coming directly from the coal pile, sewage treatment plant effluent and yard drains from other areas within the plant drain to this outfall. The primary treatment method for the CPRO system consists of flocculation by the addition of aluminum sulfate and polymer.

Aluminum sulfate is pumped directly from the bulk storage tank to the culvert inlet next to the CPRO pump house. Laboratory personnel determine and set the correct pump stroke. Anionic or Cationic polymer is added at the mixing box located between the CPRO pump house and Hanaford Creek. This treatment makes larger and heavier floc particles, which then settles in the CPRO pond system.

8. Discharge to Mine Pond 3E

When the CPRO pond temperature rises due to ambient air temperatures, such that the facility cannot meet the Outfall 001 temperature requirements, it pumps this wastewater from the final settling pond to Mine Pond 3E and conducts the applicable monitoring.

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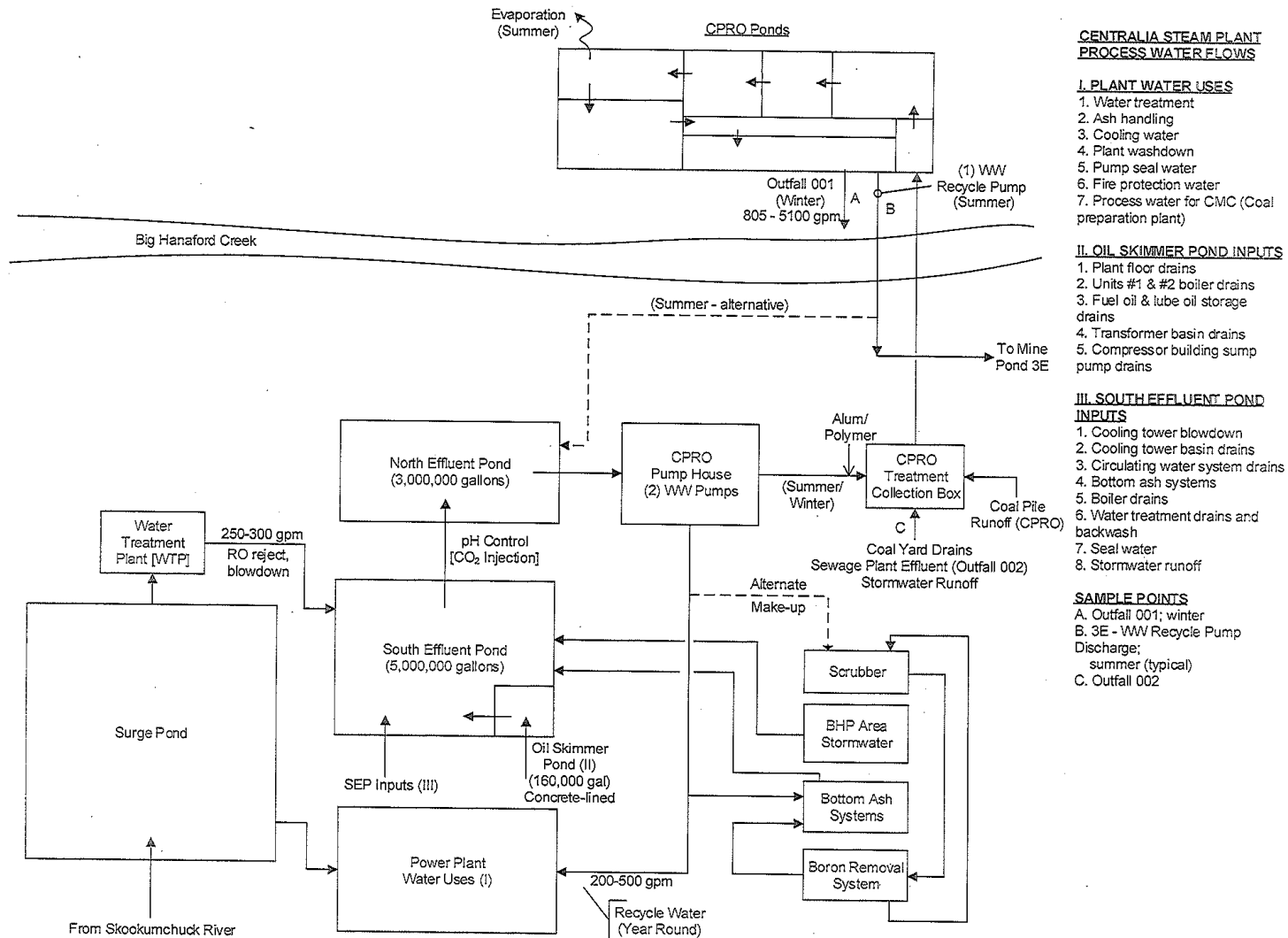


Figure 3. Wastewater Treatment System Block Flow Diagram

Solid wastes

Below is a listing and description of solid waste generated by TCG:

Recyclables

Scrap Steel –Steel is collected from around the site in specially marked “scrap steel” recycling bins and are then aggregated into large dumpsters. Due to maintenance activities, the amount of the scrap metal recycled annually varies significantly but can be as much as 174 tons recycled in 2007.

Office Paper/Cardboard – TCG recycles office paper and card boards in marked containers located in all office spaces and in the warehouse. Although estimated at over 75 percent recycled, vendor recycling this material does not supply TCG with a mass of the recycled materials.

Plastics and Metals - TCG recycles spent plastic (water bottles, etc) as well as aluminum cans. TCG has not started accounting for this material on a mass basis for tracking and reporting.

Tires – All tires are recycled through TCG’s tire suppliers.

Other – Spent chemicals and oil and containers are all recycled with the product manufacturers. Many manufacturers hold a “deposit” for container which acts an incentive for recycling.

Standard Solid Waste Refuse

TCG aggressively pursues opportunities to re-use and recycle solid wastes. Many wastes still require off - site disposal and are wastes common to households, municipalities and businesses. They consist of packaging containers, non-recyclable plastic and rubber material etc. All solid wastes are collected within TCG physical boundary, where it collects and monitors all stormwater and wastewater for contaminants, and treats as necessary prior to discharge.

Sludge Disposal

Sludge disposal at TCG consists of three main types:

- Sewage treatment plant sludge
- CPRO sludge
- Effluent pond cleaning sludge

Sewage Treatment Plant Sludge

A local contractor disposes of the normal operational sludge and its volume averages 3,000 to 5,000 gallons per quarter. As needed, the facility performs a general sewage treatment plant cleaning.

CPRO Sludge Disposal

The facility currently disposes of the CPRO sediment by using an excavator to load trucks that transport the sediment to the Mine for disposal.

Effluent Pond Cleaning

TCG uses the wastewater from the north effluent pond for various plant processes. The largest portion is used in ash handling systems. Overflow from the ash system returns to the south effluent pond. This

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constitutes the major source of the settleable suspended solids in the effluent ponds. Another source of solids is silt from various yard drains. TCG periodically removes these solids using the same method and location of disposal as the CPRO sediment. The total volume of sediment handled varies, but it ranges from 5,000 to 10,000 cubic yards per year.

Discharge outfalls

This NPDES permit authorizes wastewater discharge through three outfalls (Outfalls 001, 002 and 003).

Outfall 001 -The list below identifies the sources of discharge through outfall 001:

- Outfall 002 (domestic wastewater effluent)
- Outfall 003 (treated FGD blowdown)
- South and north effluent ponds
- Coal pile runoff

The discharge flows for the TCG are conveyed through various drains and pipe lines from the TCG facility to a series of settling ponds. The CPRO treatment ponds are the confluence of the north and the south pond system. The cooling tower blow down, coal pile runoff, site stormwater runoff, treated sanitary wastewater and potential FGD blowdown flow to the CPRO ponds. The CPRO ponds are divided by berms and curtains into eight cells. The final cell discharges to the monitoring station (parshall flume) and then Hanford Creek.

Outfall 002-this internal outfall is designed to monitor the quality of domestic wastewater (Sanitary sewage) system, with a rated capacity of 20,000 gallons per day (30-day average). The wastewater through this outfall combines with the outfall 001 discharge at the CPRO treatment collection box.

Outfall 003- Ecology is applying new applicable 40 CFR 423 to FGD before this wastewater is comingled with the other waste-streams. Section IIIB of this fact sheet discusses the technology based FGD limits.

B. Description of the receiving water

TCG discharges to Hanaford Creek which is a tributary of Skookumchuck River. Skookumchuck River discharges to Chehalis River. Other nearby point source outfalls include TransAlta Centralia Mining and TransAlta Limited Purpose Landfill. Significant nearby non-point sources of pollutants are unknown. Nearby drinking water intakes are not known. Section IIIE of this fact sheet describes any receiving waterbody impairments.

C. Wastewater characterization

TCG reported the concentration of pollutants in the discharge in the permit application and in discharge monitoring reports. The following tabulated data also includes Ecology inspection monitoring results. The tabulated data represents the quality of the wastewater effluent discharged from December 1, 2010 - Current. The wastewater effluent is characterized as follows:

Table 3 Wastewater Characterization (Outfall 001)-Industrial wastewater

Parameter	Units	Average Value	Maximum Value
Arsenic, total	µg/L	4.18	6.7
Chromium, total	mg/L	0.006	0.02

Table 3 Wastewater Characterization (Outfall 001)-Industrial wastewater

Parameter	Units	Average Value	Maximum Value
Chromium (Hex)	µg/L	2.28	5
Copper, total	µg/L	1.72	5.6
Dissolved Oxygen (D.O)	mg/L	11.21	14.4
Hardness	mg/L	76.88	119
Mercury, total	ng/L	13.7	56.4
Oil and Grease	mg/L	5	3.5
Selenium, total	µg/L	1.72	3.76
TSS	mg/L	5.56	20.4
Temperature	°C	9.96	20.9
Chlorine, Total Residual	µg/L	<50	<90
Turbidity	NTU	8.2	22.6
Zinc, total	µg/L	4.7	13.7

Parameter	Units	Minimum Value	Maximum Value
pH	standard units	7.28	8.8

Table 4 Wastewater Characterization (Pond 3E)-Industrial Wastewater

Parameter	Units	Average Value	Maximum Value
Chromium, total	mg/L	0.0043	0.0115
Copper, total	µg/L	2.2	6.6
Oil and Grease	mg/L	3.2	5
Selenium, total	µg/L	0.83	1.8
TSS	mg/L	7.50	34.4
Chlorine, total residual	µg/L	<50	<90
Zinc, total	mg/L	0.01	0.03
Parameter	Units	Minimum Value	Maximum Value
pH	standard units	7.84	8.52

Table 5 Wastewater Characterization (Outfall 002) -Domestic Wastewater

Parameter	Units	Average Value	Maximum Value
BOD5	lbs/day	0.50	2.06
TSS	lbs/day	0.40	4.20
Chlorine, total residual	mg/L	1.38	1.90
Parameter	Units	Maximum Monthly Geometric Mean	Maximum Weekly Geometric Mean
Fecal Coliform	#/100 mL	1.85	3.14
Parameter	Units	Minimum Value	Maximum Value
pH	standard units	7.05	7.5

D. Summary of compliance with previous permit Issued

The previous permit placed effluent limits on pollutants specified under condition S1 of the permit. TCG has complied with the effluent limits and permit conditions for most of the time throughout the duration of the permit issued on September 27, 2010. Ecology assessed compliance based on its review of the facility's information in the Ecology Permitting and Reporting Information System (PARIS), discharge monitoring reports (DMRs) and on inspections.

The following table summarizes the violations and permit triggers that occurred during the permit term. Permit triggers are not violations but rather when triggered require the permit holder to take an action defined in the permit.

Table 6 Violations/Permit Triggers

Outfall 001 (Industrial Wastewater Discharge)							
Begin Date	Parameter	Statistical Base	Units	Value	Min Limit	Max Limit	Violation
3/1/2015	Chlorine, Total residual	Daily Maximum	ug/L	90	-	50	Numeric effluent violation
3/1/2015	Chlorine, Total residual	Average Monthly	ug/L	90	-	50	Numeric effluent violation
2/1/2015	Chlorine, Total residual	Daily Maximum	ug/L	90	-	50	Numeric effluent violation
2/1/2015	Chlorine, Total residual	Average Monthly	ug/L	90	-	50	Numeric effluent violation
1/1/2015	Chlorine, Total residual	Average Monthly	ug/L	90	-	50	Numeric effluent violation
1/1/2015	Chlorine, Total residual	Daily Maximum	ug/L	90	-	50	Numeric effluent violation
12/1/2014	Chlorine, Total residual	Average Monthly	ug/L	90	-	50	Numeric effluent violation
12/1/2014	Chlorine, Total residual	Daily Maximum	ug/L	90	-	50	Numeric effluent violation
9/1/2013	Temperature, Measured	Daily Maximum	Degrees C	20.9	-	17.5	Numeric effluent violation
2/1/2013	Zinc, Total	Daily Maximum	mg/L	-	-	1	Analysis not Conducted
2/1/2013	Chromium, Total	Average Monthly	mg/L	-	-	0.2	Analysis not Conducted
2/1/2013	Zinc, Total	Average Monthly	mg/L	-	-	1	Analysis not Conducted
2/1/2013	Chromium, Total	Daily Maximum	mg/L	-	-	0.2	Analysis not Conducted
1/13/2014	Mercury, Total		ng/L	56.4		Non-detect	
1/13/2014	Arsenic, Total		ug/L	6.7		Non-detect	
1/13/2014	Antimony, Total		ug/L	2		Non-detect	
1/13/2014	Nickel, Total		ug/L	1.33		Non-detect	

The following table summarizes compliance with report submittal requirements over the permit term.

Table 7 Permit Submittals

Submittal Name	Submittal Status	Report Begin Date	Due Date	Received Date	Reviewed Date	Submittal Notes
Cooling Tower blowdown evaluation	Accepted		3/1/2011			
AKART/ Engineering Report	Accepted		12/1/2011	7/3/2013	9/24/2013	Revised report for treatment of copper in effluent from TransAlta Centralia. (email received 7/3/13; hard-copy received 7/25/13) Reply letter sent 10/1/13
Response to Inspection Report	Accepted	1/30/2012		2/2/2012	2/14/2012	2/15/12 - Response letter to TransAlta's response letter mailed.
Operation and Maintenance Manual, Update	Accepted		1/2/2014	1/13/2014	3/7/2014	
Solid Waste Control Plan, Update	Accepted		1/2/2014	1/13/2014	3/7/2014	
Spill Plan, Update	Accepted		1/2/2014	1/13/2014	3/7/2014	
Permit Renewal Application	Accepted		1/2/2014	1/13/2014	3/7/2014	Additional information was received on 3/4/2014

E. State environmental policy act (SEPA) compliance

State law exempts the issuance, reissuance or modification of any wastewater discharge permit from the SEPA process as long as the permit contains conditions that are no less stringent than federal and state rules and regulations (RCW 43.21C.0383). The exemption applies only to existing discharges, not to new discharges.

III. Proposed Permit Limits

Federal and state regulations require that effluent limits in an NPDES permit must be either technology- or water quality-based.

- Technology-based limits are based upon the treatment methods available to treat specific pollutants. Technology-based limits are set by the EPA and published as a regulation, or Ecology develops the limit on a case-by-case basis (40 CFR 125.3, and chapter 173-220 WAC).
- Water quality-based limits are calculated so that the effluent will comply with the Surface Water Quality Standards (chapter 173-201A WAC), Ground Water Standards (chapter 173-200 WAC), Sediment Quality Standards (chapter 173-204 WAC), or the National Toxics Rule (40 CFR 131.36).
- Ecology must apply the most stringent of these limits to each parameter of concern. These limits are described below.

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The limits in this permit reflect information received in the application and from supporting reports (engineering, hydrogeology, etc.). Ecology evaluated the permit application and determined the limits needed to comply with the rules adopted by the state of Washington. Ecology does not develop effluent limits for all reported pollutants. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation.

Ecology does not usually develop limits for pollutants not reported in the permit application but may be present in the discharge. The permit does not authorize discharge of the non-reported pollutants. During the five-year permit term, the facility's effluent discharge conditions may change from those conditions reported in the permit application. The facility must notify Ecology if significant changes occur in any constituent [40 CFR 122.42(a)]. Until Ecology modifies the permit to reflect additional discharge of pollutants, a permitted facility could be violating its permit.

A. Design criteria

Under WAC 173-220-150 (1) (g), flows and waste loadings must not exceed approved design criteria. Ecology approved design criteria for this facility's treatment system to treat the Flue Gas Desulfurization System (FGD) blowdown, dated 12/06/2005 and prepared by CH2MHILL.

B. Technology-based effluent limits

423.13 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT).

"Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this part must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT).

(a) There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

(d)(1) The quantity of pollutants discharged in cooling tower blowdown shall not exceed the quantity determined by multiplying the flow of cooling tower blowdown times the concentration listed below:

Pollutant or pollutant property	BAT effluent limitations	
	Maximum concentration (mg/l)	Average concentration (mg/l)
Free available chlorine	0.5	0.2
Pollutant or pollutant property	Maximum for any 1 day –(mg/l)	Average of daily values for 30 consecutive days shall not exceed = (mg/l)
The 126 priority pollutants (Appendix A) contained in chemicals added for cooling tower maintenance, except:	(¹)	(¹)

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Chromium, total	0.2	0.2
Zinc, total	1.0	1.0

¹No detectable amount.

(2) Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine at any one time unless the utility can demonstrate to the Regional Administrator or State, if the State has NPDES permit issuing authority, that the units in a particular location cannot operate at or below this level of chlorination.

(3) At the permitting authority's discretion, instead of the monitoring specified in 40 CFR 122.11(b) compliance with the limitations for the 126 priority pollutants in paragraph (d)(1) of this section may be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.

(g)(1)(i) *FGD wastewater*. Except for those discharges to which paragraph (g)(2) or (g)(3) of this section applies, the quantity of pollutants in FGD wastewater shall not exceed the quantity determined by multiplying the flow of FGD wastewater times the concentration listed in the table following this paragraph (g)(1)(i). Dischargers must meet the effluent limitations for FGD wastewater in this paragraph by a date determined by the permitting authority that is as soon as possible beginning November 1, 2018, but no later than December 31, 2023. These effluent limitations apply to the discharge of FGD wastewater generated on and after the date determined by the permitting authority for meeting the effluent limitations, as specified in this paragraph.

Pollutant or pollutant property	BAT Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed
Arsenic, total (ug/L)	11	8
Mercury, total (ng/L)	788	356
Selenium, total (ug/L)	23	12
Nitrate/nitrite as N (mg/L)	17.0	4.4

(ii) For FGD wastewater generated before the date determined by the permitting authority, as specified in paragraph (g)(1)(i), the quantity of pollutants discharged in FGD wastewater shall not exceed the quantity determined by multiplying the flow of FGD wastewater times the concentration listed for TSS in §423.12(b)(11).

(2) For any electric generating unit with a total nameplate capacity of less than or equal to 50 megawatts or that is an oil-fired unit, the quantity of pollutants discharged in FGD wastewater shall not exceed the quantity determined by multiplying the flow of FGD wastewater times the concentration listed for TSS in §423.12(b)(11).

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(3)(i) For dischargers who voluntarily choose to meet the effluent limitations for FGD wastewater in this paragraph, the quantity of pollutants in FGD wastewater shall not exceed the quantity determined by multiplying the flow of FGD wastewater times the concentration listed in the table following this paragraph (g)(3)(i). Dischargers who choose to meet the effluent limitations for FGD wastewater in this paragraph must meet such limitations by December 31, 2023. These effluent limitations apply to the discharge of FGD wastewater generated on and after December 31, 2023.

Pollutant or pollutant property	BAT Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed
Arsenic, total (ug/L)	4	
Mercury, total (ng/L)	39	24
Selenium, total (ug/L)	5	
TDS (mg/L)	50	24

(ii) For discharges of FGD wastewater generated before December 31, 2023, the quantity of pollutants discharged in FGD wastewater shall not exceed the quantity determined by multiplying the flow of FGD wastewater times the concentration listed for TSS in §423.12(b)(11).

(h)(1)(i) *Fly ash transport water.* Except for those discharges to which paragraph (h)(2) of this section applies, or when the fly ash transport water is used in the FGD scrubber, there shall be no discharge of pollutants in fly ash transport water. Dischargers must meet the discharge limitation in this paragraph by a date determined by the permitting authority that is as soon as possible beginning November 1, 2018, but no later than December 31, 2023. This limitation applies to the discharge of fly ash transport water generated on and after the date determined by the permitting authority for meeting the discharge limitation, as specified in this paragraph. Whenever fly ash transport water is used in any other plant process or is sent to a treatment system at the plant (except when it is used in the FGD scrubber), the resulting effluent must comply with the discharge limitation in this paragraph. When the fly ash transport water is used in the FGD scrubber, the quantity of pollutants in fly ash transport water shall not exceed the quantity determined by multiplying the flow of fly ash transport water times the concentration listed in the table in paragraph (g)(1)(i) of this section.

(ii) For discharges of fly ash transport water generated before the date determined by the permitting authority, as specified in paragraph (h)(1)(i) of this section, the quantity of pollutants discharged in fly ash transport water shall not exceed the quantity determined by multiplying the flow of fly ash transport water times the concentration listed for TSS in §423.12(b)(4).

(k)(1)(i) *Bottom ash transport water.* Except for those discharges to which paragraph (k)(2) of this section applies, or when the bottom ash transport water is used in the FGD scrubber, there shall be no discharge of pollutants in bottom ash transport water. Dischargers must meet the discharge limitation in this paragraph by a date determined by the permitting authority that is as soon as possible beginning November 1, 2018, but no later than December 31, 2023. This limitation applies to the discharge of bottom ash transport water generated on and after the date determined by the permitting authority for meeting the discharge limitation,

as specified in this paragraph. Whenever bottom ash transport water is used in any other plant process or is sent to a treatment system at the plant (except when it is used in the FGD scrubber), the resulting effluent must comply with the discharge limitation in this paragraph. When the bottom ash transport water is used in the FGD scrubber, the quantity of pollutants in bottom ash transport water shall not exceed the quantity determined by multiplying the flow of bottom ash transport water times the concentration listed in the table in paragraph (g)(1)(i) of this section.

(ii) For discharges of bottom ash transport water generated before the date determined by the permitting authority, as specified in paragraph (k)(1)(i) of this section, the quantity of pollutants discharged in bottom ash transport water shall not exceed the quantity determined by multiplying the flow of bottom ash transport water times the concentration for TSS listed in §423.12(b)(4).”

FGD Wastewater Effluent Limits

The permittee’s permit renewal application stated that there is discharge of 0.07 MGD from FGD. During the site visit of permit writer in June 2016, it was stated that there is no discharge from FGD. The treatment and management of this wastewater is discussed under the treatment section of this fact sheet. It appears from the NPDES permit renewal application and discussion with the permittee there could be a potential discharge from the FGD system. Based on the permit renewal application and discussion with the permittee it was decided to apply the following permits limits (table 9), effective April 6, 2020. April 6, 2020, effective date coincides with compliance schedule of water quality based permit limit for mercury. These effluent limits are applied to the FGD waste stream (effluent) before this waste stream is comingled with other waste streams which includes cooling tower blowdown.

Table 9 Effluent Limitations and Standards for FGD Wastewater			
Waste-Stream	Pollutants	Daily maximum limitation	Monthly average limitation
FGD Wastewater (BAT & PSES)	Arsenic (µg/L)	11.0	8.0
	Mercury (ng/L)	788	356
	Nitrate/nitrite as N (mg/L)	17.0	4.4
	Selenium (µg/L)	23	12
Voluntary Incentive program for FGD Wastewater (BAT only)	Arsenic (µg/L)	^a 4	^(b)
	Mercury (ng/L)	39	24
	Selenium (µg/L)	^a 5	^(b)
	TDS (mg/L)	50	24

^a Limitation is set equal to the quantitation limit.

^b Monthly average limitation is not established when the daily maximum limitation is based on the quantitation limit.

Bottom Ash System Surge Tank Overflow

NPDES permit renewal application of TCG does not identify bottom ash system surge tank overflow but the wastewater treatment flow diagram (Figure 3) shows that there is bottom ash surge tank overflows to the south effluent pond. 40 CFR 423 requires that there shouldn’t be discharge from ash handling system. Ecology is proposing in this permit renewal that the permittee must address/cease the bottom ash surge tank overflow to the south effluent pond by April 6, 2020 and this date coincides with the FGD and water quality based permit limit compliance date of April 6, 2020.

Cooling Tower Blowdown

The permittee could submit an engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge (cooling tower blowdown) by the analytical methods in 40 Code of Federal Regulations (CFR) 136. If an engineering calculations showed that the cooling tower blowdown is not the source of these pollutants but the pollutants are still detected in the discharge then the permittee must meet the water quality based limits or any other applicable technology based limits for the detected pollutants. Ecology will keep these non-detection limits until the water quality and applicable technology based limits are met.

It should be noted that in the current permit, the permittee is required to meet the non-detect requirements for all priority pollutants except chromium, chromium (hex), copper, selenium and zinc for the combined effluent (cooling tower blowdown, boiler blowdown, coal pile runoff, stormwater runoff, water treatment plant blowdown (RO reject), FGD blowdown, and treated Sanitary effluent) before it is discharged to Hanaford Creek.

In the permit renewal application, TCG submitted priority pollutants scan and this report showed antimony, arsenic, chromium, copper, mercury, nickel, selenium, and zinc were detected in the discharge. Ecology conducted reasonable potential analysis for these analytes which showed that the Permittee has a reasonable potential to exceed surface water quality criteria for mercury. Ecology is proposing a compliance schedule for the Permittee to comply with surface water quality standards for mercury. In the last permit cycle, Ecology established permit limits for selenium, copper and chromium (hex) based on the water quality criteria and Ecology will maintain these permit limits in the proposed permit.

Outfall 002

TCG has also domestic wastewater treatment plant and the applicable Code of Federal Regulation (CFR) and Washington Administrative Code (WAC) are the following:

Technology-Based Effluent Limits

Federal and state regulations define technology-based effluent limits for municipal wastewater treatment plants. These effluent limits are given in 40 CFR Part 133 (federal) and in chapter 173-221 WAC. These regulations are performance standards that constitute all known, available, and reasonable methods of prevention, control, and treatment (AKART) for municipal wastewater. Chapter 173-221 WAC lists the following technology-based limits for pH, fecal coliform, BOD₅, and TSS:

Table 10 Technology-based Limits for Outfall 002.

Parameter	Limit
pH	The pH must measure within the range of 6.0 to 9.0 standard units.
Fecal Coliform Bacteria	Monthly Geometric Mean = 200 organisms/100 mL Weekly Geometric Mean = 400 organisms/100 mL
BOD ₅ (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L

Parameter	Limit
TSS (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
Chlorine	Average Monthly Limit = 2.0 mg/L Maximum Daily Limit = 2.0 mg/L

The existing permit has a chlorine limit of 2.0 mg/L for outfall 002 and the facility is able to comply with it. The proposed permit includes the same limit. This chlorine limit is higher than the technology based and water quality based limits due to the fact that at this outfall 002, the Permittee is not directly discharging their wastewater to the surface water. This outfall 002 is discharging to outfall 001 which does go to the surface water.

The technology-based mass limits are based on WAC 173-220-130(3)(b) and 173-221-030(11)(b).

Monthly effluent mass loadings for both BOD5 and TSS (lbs/day) = maximum monthly design flow (0.036MGD) x Concentration limit (30 mg/L) x 8.34 (conversion factor) = mass limit **9.0 lb/day.**

The weekly average effluent mass loading = 1.5 x monthly loading = **13.5 lbs/day.**

C. Surface water quality-based effluent limits

The Washington State surface water quality standards (chapter 173-201A WAC) are designed to protect existing water quality and preserve the beneficial uses of Washington's surface waters. Waste discharge permits must include conditions that ensure the discharge will meet the surface water quality standards (WAC 173-201A-510). Water quality-based effluent limits may be based on an individual waste load allocation or on a waste load allocation developed during a basin wide total maximum daily load study (TMDL).

Numerical criteria for the protection of aquatic life and recreation

Numerical water quality criteria are listed in the water quality standards for surface waters (chapter 173-201A WAC). They specify the maximum levels of pollutants allowed in receiving water to protect aquatic life and recreation in and on the water. Ecology uses numerical criteria along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limits, the discharge must meet the water quality-based limits.

Numerical criteria for the protection of human health

The U.S. EPA has published 91 numeric water quality criteria for the protection of human health that are applicable to dischargers in Washington State (EPA, 1992). These criteria are designed to protect humans from exposure to pollutants linked to cancer and other diseases, based on consuming fish and shellfish and drinking contaminated surface waters. The water quality standards also include radionuclide criteria to protect humans from the effects of radioactive substances.

Narrative criteria

Narrative water quality criteria (e.g., WAC 173-201A-240(1); 2006) limit the toxic, radioactive, or other deleterious material concentrations that the facility may discharge to levels below those which have the potential to:

- Adversely affect designated water uses.
- Cause acute or chronic toxicity to biota.
- Impair aesthetic values.
- Adversely affect human health.

Narrative criteria protect the specific designated uses of all fresh waters (WAC 173-201A-200, 2006) and of all marine waters (WAC 173-201A-210, 2006) in the state of Washington.

Antidegradation

Description--The purpose of Washington's Antidegradation Policy (WAC 173-201A-300-330; 2006) is to:

- Restore and maintain the highest possible quality of the surface waters of Washington.
- Describe situations under which water quality may be lowered from its current condition.
- Apply to human activities that are likely to have an impact on the water quality of surface water.
- Ensure that all human activities likely to contribute to a lowering of water quality, at a minimum, apply all known, available, and reasonable methods of prevention, control, and treatment (AKART).
- Apply three tiers of protection (described below) for surface waters of the state.

Tier I ensures existing and designated uses are maintained and protected and applies to all waters and all sources of pollutions. Tier II ensures that waters of a higher quality than the criteria assigned are not degraded unless such lowering of water quality is necessary and in the overriding public interest. Tier II applies only to a specific list of polluting activities. Tier III prevents the degradation of waters formally listed as "outstanding resource waters," and applies to all sources of pollution.

A facility must prepare a Tier II analysis when all three of the following conditions are met:

- The facility is planning a new or expanded action.
- Ecology regulates or authorizes the action.
- The action has the potential to cause measurable degradation to existing water quality at the edge of a chronic mixing zone.

Facility Specific Requirements--This facility must meet Tier I requirements.

- Dischargers must maintain and protect existing and designated uses. Ecology must not allow any degradation that will interfere with, or become injurious to, existing or designated uses, except as provided for in chapter 173-201A WAC.
- For waters that do not meet assigned criteria, or protect existing or designated uses, Ecology will take appropriate and definitive steps to bring the water quality back into compliance with the water quality standards.

- Whenever the natural conditions of a water body are of a lower quality than the assigned criteria, the natural conditions constitute the water quality criteria. Where water quality criteria are not met because of natural conditions, human actions are not allowed to further lower the water quality, except where explicitly allowed in chapter 173-201A WAC.

Ecology's analysis described in this section of the fact sheet demonstrates that the proposed permit conditions will protect existing and designated uses of the receiving water.

Mixing zones

A mixing zone is the defined area in the receiving water surrounding the discharge port(s), where wastewater mixes with receiving water. Within mixing zones the pollutant concentrations may exceed water quality numeric standards, so long as the discharge doesn't interfere with designated uses of the receiving water body (for example, recreation, water supply, and aquatic life and wildlife habitat, etc.) The pollutant concentrations outside of the mixing zones must meet water quality numeric standards.

State and federal rules allow mixing zones because the concentrations and effects of most pollutants diminish rapidly after discharge, due to dilution. Ecology defines mixing zone sizes to limit the amount of time any exposure to the end-of-pipe discharge could harm water quality, plants, or fish.

The state's water quality standards allow Ecology to authorize mixing zones for the facility's permitted wastewater discharges only if those discharges already receive all known, available, and reasonable methods of prevention, control, and treatment (AKART). Mixing zones typically require compliance with water quality criteria within a specified distance from the point of discharge and must not use more than 25% of the available width of the water body for dilution [WAC 173-201A-400 (7)(a)(ii-iii)].

Ecology uses modeling to estimate the amount of mixing within the mixing zone. Through modeling Ecology determines the potential for violating the water quality standards at the edge of the mixing zone and derives any necessary effluent limits. Steady-state models are the most frequently used tools for conducting mixing zone analyses. Ecology chooses values for each effluent and for receiving water variables that correspond to the time period when the most critical condition is likely to occur (see Ecology's *Permit Writer's Manual*). Each critical condition parameter, by itself, has a low probability of occurrence and the resulting dilution factor is conservative. The term "reasonable worst-case" applies to these values.

The mixing zone analysis produces a numerical value called a dilution factor (DF). A dilution factor represents the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. For example, a dilution factor of 4 means the effluent is 25% and the receiving water is 75% of the total volume of water at the boundary of the mixing zone. Ecology uses dilution factors with the water quality criteria to calculate reasonable potentials and effluent limits. Water quality standards include both aquatic life-based criteria and human health-based criteria. The former are applied at both the acute and chronic mixing zone boundaries; the latter are applied only at the chronic boundary. The concentration of pollutants at the boundaries of any of these mixing zones may not exceed the numerical criteria for that zone.

Each aquatic life *acute* criterion is based on the assumption that organisms are not exposed to that concentration for more than one hour and more often than one exposure in three years. Each aquatic life *chronic* criterion is based on the assumption that organisms are not exposed to that concentration for more than four consecutive days and more often than once in three years.

The two types of human health-based water quality criteria distinguish between those pollutants linked to non-cancer effects (non-carcinogenic) and those linked to cancer effects (carcinogenic). The human

health-based water quality criteria incorporate several exposure and risk assumptions. These assumptions include:

- A 70-year lifetime of daily exposures.
- An ingestion rate for fish or shellfish measured in kg/day.
- An ingestion rate of two liters/day for drinking water.
- A one-in-one-million cancer risk for carcinogenic chemicals.

This permit does not authorize a mixing zone.

D. Designated uses and surface water quality criteria

Applicable designated uses and surface water quality criteria are defined in chapter 173-201A WAC. In addition, the U.S. EPA set human health criteria for toxic pollutants (EPA 1992). The table included below summarizes the criteria applicable to this facility's discharge.

- Aquatic Life Uses are designated based on the presence of, or the intent to provide protection for the key uses. All indigenous fish and non-fish aquatic species must be protected in waters of the state in addition to the key species. The Aquatic Life Uses for this receiving water are identified below.

Table 11 Freshwater Aquatic Life Uses and Associated Criteria

Salmonid Spawning, Rearing, and Migration	
Temperature Criteria – Highest 7-DAD MAX	17.5°C (63.5°F)
Dissolved Oxygen Criteria – Lowest 1-Day Minimum	8.0 mg/L
Turbidity Criteria	<ul style="list-style-type: none"> • 5 NTU over background when the background is 50 NTU or less; or • A 10 percent increase in turbidity when the background turbidity is more than 50 NTU.
Total Dissolved Gas Criteria	Total dissolved gas must not exceed 110 percent of saturation at any point of sample collection.
pH Criteria	The pH must measure within the range of 6.5 to 8.5 with a human-caused variation within the above range of less than 0.5 units.

- The *recreational uses* for this receiving water are identified below.

Table 12 Recreational Uses and Associated Criteria

Recreational Use	Criteria
Primary Contact Recreation	Fecal coliform organism levels must not exceed a geometric mean value of 100 colonies /100 mL, with not more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 200 colonies /100 mL.

- The *water supply uses* are domestic, agricultural, industrial, and stock watering.

- The *miscellaneous freshwater uses* are wildlife habitat, harvesting, commerce and navigation, boating, and aesthetics.

E. Water quality impairments

TCG discharges to Hanaford Creek which is part of upper Chehalis river drainage basin. Ecology completed a Total Maximum Daily Load (TMDL) study for upper Chehalis river drainage for bacteria 2004, temperature 2001 and Dissolved oxygen, BOD₅, Ammonia in 1996.

The TMDL does not include waste load allocations (WLA) for TCG but Ecology has applied applicable surface water quality criteria for this discharge which includes DO, temperature and turbidity. Applicable surface water quality criteria are described under the proposed permit limits (section III L).

F. Evaluation of surface water quality-based effluent limits for narrative criteria

Ecology must consider the narrative criteria described in WAC 173-201A-160 when it determines permit limits and conditions. Narrative water quality criteria limit the toxic, radioactive, or other deleterious material concentrations that the facility may discharge which have the potential to adversely affect designated uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health.

Ecology considers narrative criteria when it evaluates the characteristics of the wastewater and when it implements all known, available, and reasonable methods of treatment and prevention (AKART) as described above in the technology-based limits section. When Ecology determines if a facility is meeting AKART it considers the pollutants in the wastewater and the adequacy of the treatment to prevent the violation of narrative criteria.

In addition, Ecology considers the toxicity of the wastewater discharge by requiring whole effluent toxicity (WET) testing when there is a reasonable potential for the discharge to contain toxics. Ecology's analysis of the need for WET testing for this discharge is described later in the fact sheet (section III K).

G. Evaluation of surface water quality-based effluent limits for numeric criteria

Ecology has not authorized a mixing zone in the permit.

BOD₅ –TCG has a small domestic wastewater treatment plant which treats the wastewater that is generated at TCG and TCM facilities. With technology-based limits that Ecology has imposed, this discharge results in a small amount of BOD loading relative to the large amount of dilution when it comingles with other waste-streams before it is discharged to Hanaford Creek. Technology-based limits will ensure that dissolved oxygen criteria are met in the receiving water. Ecology has applied DO limit of 8.0 mg/L at Outfall 001 and DMRs show that the permittee has consistently met DO limit of 8.0 mg/L. The results are shown in Table 5 of wastewater characterization

Fecal Coliform-- TCG has a small domestic wastewater treatment plant which treats the wastewater that is generated at TCG and TCM facilities. With technology-based limits that Ecology has imposed, this discharge results in small numbers of fecal coliforms. The technology based effluent limit ensures fecal coliform criteria are met before this wastewater is discharged to Hanaford Creek. The results are shown in Table 5 under the wastewater characterization.

Turbidity—Ecology has imposed the surface water quality standards for turbidity for this discharge and the DMRs report shows that the permittee has consistently met the surface water quality for their discharge. The wastewater characterization is shown in Table 5 of this fact sheet.

Toxic Pollutants--Federal regulations (40 CFR 122.44) require Ecology to place limits in NPDES permits on toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. Ecology does not exempt facilities with technology-based effluent limits from meeting the surface water quality standards.

The following toxic pollutants are present in the discharge: The priority pollutants analysis reports that the Permittee submitted to Ecology showed antimony, arsenic, chromium, copper, mercury, nickel, selenium, and zinc were detected in the discharge. Ecology conducted reasonable potential analysis for these analytes which showed that the Permittee has a reasonable potential to exceed surface water quality criteria for mercury. This reasonable potential analysis is shown in appendix E of this permit. In the last permit cycle, Ecology established permit limits for selenium, copper and chromium (hex) based on the water quality criteria and Ecology will maintain these permit limits in the proposed permit. Ecology is proposing a compliance schedule for the Permittee to comply with surface water quality standards for mercury. This compliance schedule is in accordance with WAC 173-220-140. The proposed permit has established the compliance schedule for the Permittee to comply with the water quality criteria for mercury. This compliance schedule is discussed in VF. The proposed permit contains non-detect for priority pollutants and this includes mercury. These limits are applied at the discharge point to Hanaford Creek.

Water quality criteria for most metals published in chapter 173-201A WAC are based on the dissolved fraction of the metal (see footnotes to table WAC 173-201A-240(3); 2006). TCG may provide data clearly demonstrating the seasonal partitioning of the dissolved metal in the ambient water in relation to an effluent discharge. Ecology may adjust a metal's translator on a site-specific basis when data is available clearly demonstrating the seasonal partitioning in the ambient water in relation to an effluent discharge.

Temperature--The state temperature standards (WAC 173-201A-200-210 and 600-612) include multiple elements:

- Annual summer maximum threshold criteria (June 15 to September 15)
- Supplemental spawning and rearing season criteria (September 15 to June 15)
- Incremental warming restrictions
- Protections against acute effects

Ecology evaluates each criterion independently to determine reasonable potential and derive permit limits.

- Annual summer maximum and supplementary spawning/rearing criteria

Each water body has an annual maximum temperature criterion [WAC 173-201A-200(1)(c), 210(1)(c), and Table 602]. These threshold criteria (e.g., 12, 16, 17.5, 20°C) protect specific categories of aquatic life by controlling the effect of human actions on summer temperatures.

Some waters have an additional threshold criterion to protect the spawning and incubation of salmonids (9°C for char and 13°C for salmon and trout) [WAC 173-201A-602, Table 602]. These criteria apply during specific date-windows.

The threshold criteria apply at the edge of the chronic mixing zone. Criteria for most fresh waters are expressed as the highest 7-Day average of daily maximum temperature (7-DADMax). The 7-DADMax temperature is the arithmetic average of seven consecutive measures of daily maximum temperatures. Criteria for marine waters and some fresh waters are expressed as the highest 1-Day annual maximum temperature (1-DMax).

- Incremental warming criteria

The water quality standards limit the amount of warming human sources can cause under specific situations [WAC 173-201A-200(1)(c)(i)-(ii), 210(1)(c)(i)-(ii)]. The incremental warming criteria apply at the edge of the chronic mixing zone.

At locations and times when background temperatures are cooler than the assigned threshold criterion, point sources are permitted to warm the water by only a defined increment. These increments are permitted only to the extent doing so does not cause temperatures to exceed either the annual maximum or supplemental spawning criteria.

At locations and times when a threshold criterion is being exceeded due to natural conditions, all human sources, considered cumulatively, must not warm the water more than 0.3°C above the naturally warm condition.

When Ecology has not yet completed a TMDL, our policy allows each point source to warm water at the edge of the chronic mixing zone by 0.3°C. This is true regardless of the background temperature and even if doing so would cause the temperature at the edge of a standard mixing zone to exceed the numeric threshold criteria. Allowing a 0.3°C warming for each point source is reasonable and protective where the dilution factor is based on 25% or less of the critical flow. This is because the fully mixed effect on temperature will only be a fraction of the 0.3°C cumulative allowance (0.075°C or less) for all human sources combined.

- Protections for temperature acute effects

Instantaneous lethality to passing fish: The upper 99th percentile daily maximum effluent temperature must not exceed 33°C, unless a dilution analysis indicates ambient temperatures will not exceed 33°C two seconds after discharge.

General lethality and migration blockage: Measurable (0.3°C) increases in temperature at the edge of a chronic mixing zone are not allowed when the receiving water temperature exceeds either a 1DMax of 23°C or a 7DADMax of 22°C.

Lethality to incubating fish: Human actions must not cause a measurable (0.3°C) warming above 17.5°C at locations where eggs are incubating.

Reasonable Potential Analysis

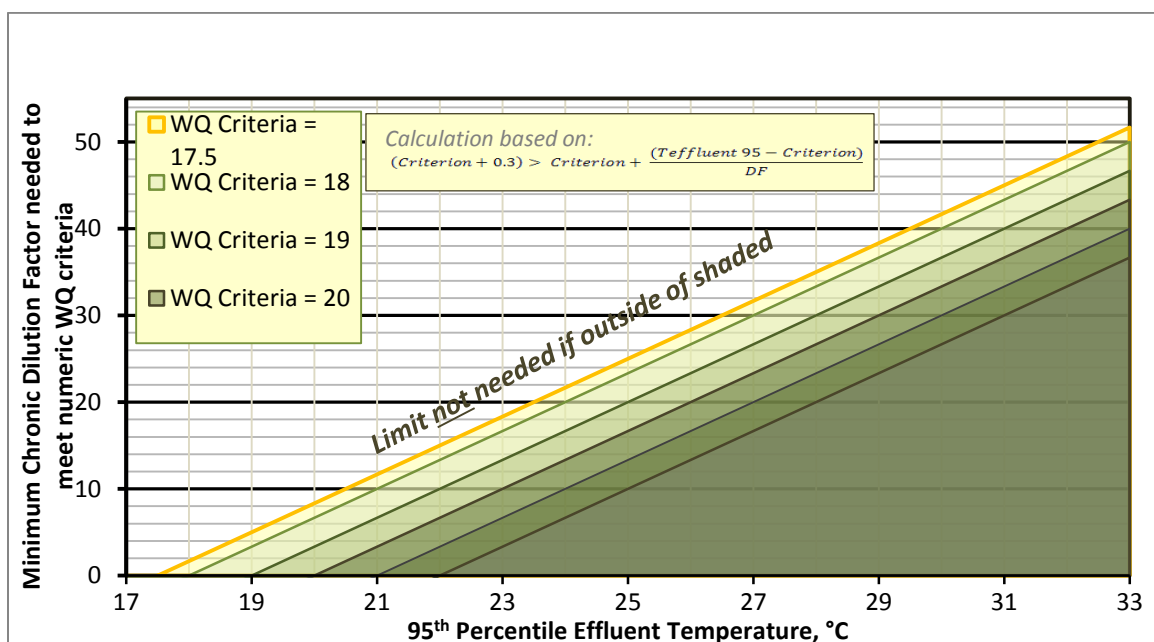
Annual summer maximum, supplementary spawning criterion, and incremental warming criteria: Ecology calculated the reasonable potential for the discharge to exceed the annual summer

maximum, the supplementary spawning criterion, and the incremental warming criteria at the edge of the chronic mixing zone during critical condition. No reasonable potential exists to exceed the temperature criterion where:

$$(\text{Criterion} + 0.3) > [\text{Criterion} + (\text{Teffluent95} - \text{Criterion})/\text{DF}].$$

The figure below graphically portrays the above equation and shows the conditions when a permit limit will apply.

Figure 4 Dilution Necessary to Meet Criteria at Edge of Mixing Zone



$$(17.5 + 0.3) > (17.5 + (17.12 - 17.5)/1).$$

Ecology assessed last five years effluent temperature data against the applicable surface water quality standards. This assessment showed that the permittee would not exceed designated temperature criteria for the receiving water body (Hanaford Creek). Ecology requires the permittee to cease the discharge to Hanaford Creek when the effluent temperature reaches to 17.5 °C.

H. Human health

Washington's water quality standards include 91 numeric human health-based criteria that Ecology must consider when writing NPDES permits. These criteria were established in 1992 by the U.S. EPA in its National Toxics Rule (40 CFR 131.36). The National Toxics Rule allows states to use mixing zones to evaluate whether discharges comply with human health criteria.

Ecology determined the effluent may contain chemicals of concern for human health, based on (1) the facility's status as an EPA major discharger, (2) data or information indicating the discharge contains regulated chemicals.

Ecology evaluated the discharge's potential to violate the water quality standards as required by 40 CFR 122.44(d) by following the procedures published in the *Technical Support Document for Water Quality-Based Toxics Control* (EPA/505/2-90-001) and Ecology's *Permit Writer's Manual* to make a reasonable potential determination. The results of this analysis is shown in appendix D of this permit.

I. Sediment quality

The aquatic sediment standards (chapter 173-204 WAC) protect aquatic biota and human health. Under these standards Ecology may require a facility to evaluate the potential for its discharge to cause a violation of sediment standards (WAC 173-204-400). You can obtain additional information about sediments at the Aquatic Lands Cleanup Unit website. <http://www.ecy.wa.gov/programs/tcp/smu/sediment.html>

Ecology could not determine at this time the potential for this discharge to cause a violation of the sediment quality standards. If in the future Ecology determines a potential for violation of the Sediment Quality Standards, it will issue an order requiring TCG to demonstrate either:

- The point of discharge is not an area of deposition, or
- Toxics do not accumulate in the sediments even though the point of discharge is a depositional area.

J. Groundwater quality limits

The groundwater quality standards (chapter 173-200 WAC) protect beneficial uses of groundwater. Permits issued by Ecology must not allow violations of those standards (WAC 173-200-100).

TCG does not discharge wastewater to the ground. No permit limits are required to protect groundwater.

K. Whole effluent toxicity

The water quality standards for surface waters forbid discharge of effluent that has the potential to cause toxic effects in the receiving waters. Many toxic pollutants cannot be measured by commonly available detection methods. However, laboratory tests can measure toxicity directly by exposing living organisms to the wastewater and measuring their responses. These tests measure the aggregate toxicity of the whole effluent, so this approach is called whole effluent toxicity (WET) testing. Some WET tests measure acute toxicity and other WET tests measure chronic toxicity.

- *Acute toxicity tests measure mortality as the significant response* to the toxicity of the effluent. Dischargers who monitor their wastewater with acute toxicity tests find early indications of any potential lethal effect of the effluent on organisms in the receiving water.
- *Chronic toxicity tests measure various sublethal toxic responses*, such as reduced growth or reproduction. Chronic toxicity tests often involve either a complete life cycle test on an organism with an extremely short life cycle, or a partial life cycle test during a critical stage of a test organism's life. Some chronic toxicity tests also measure organism survival.

Laboratories accredited by Ecology for WET testing know how to use the proper WET testing protocols, fulfill the data requirements, and submit results in the correct reporting format. Accredited laboratory staff know about WET testing and how to calculate an NOEC, LC50, EC50, IC25, etc. Ecology gives all accredited labs the most recent version of Ecology Publication No. WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria* (<https://fortress.wa.gov/ecy/publications/SummaryPages/9580.html>), which is referenced in the permit. Ecology recommends that TCG send a copy of the acute or chronic toxicity sections(s) of its NPDES permit to the laboratory.

Acute Toxicity

WET testing conducted during effluent characterization showed no reasonable potential for effluent discharges to cause receiving water acute toxicity. The proposed permit will not include an acute WET limit. TCG must retest the effluent before submitting an application for permit renewal.

- If this facility makes process or material changes which, in Ecology's opinion, increase the potential for effluent toxicity, then Ecology may (in a regulatory order, by permit modification, or in the permit renewal) require the facility to conduct additional effluent characterization. TCG may demonstrate to Ecology that effluent toxicity has not increased by performing additional WET testing and/or chemical analyses after the process or material changes have been made. Ecology recommends that the Permittee check with it first to make sure that Ecology will consider the demonstration adequate to support a decision to not require an additional effluent characterization.
- If WET testing conducted for submittal with a permit application fails to meet the performance standards in WAC 173-205-020, Ecology will assume that effluent toxicity has increased.

Chronic Toxicity

WET testing conducted during the previous permit term showed a reasonable potential for the effluent to cause chronic toxicity in the receiving water. Ecology's review of whole effluent toxicity (WET) for last 5 years show that the samples in September and November of 2013 had chronic effect. The performance standard for chronic toxicity is no toxicity in a 100 percent concentration of effluent. The Permittee conducted follow-up tests in August and December of 2014, and these tests didn't show chronic toxicity in the discharge. The Permittee states in a letter of February 2016, to Ecology, that the source of chronic toxicity could have been a new chemical that they were using on trial basis for cooling tower maintenance. TCG states that they have ceased the application of that chemical. Ecology is proposing chronic toxicity permit limit in the permit renewal. This permit limit will be removed if the Permittee demonstrates compliance for minimum of three consecutive test years as stated in WAC 173-205-120.

The effluent limit for chronic toxicity is: No toxicity detected in a test sample representing the chronic critical effluent concentration (CCEC). The CCEC is the concentration of effluent at the boundary of the mixing zone during critical conditions. If the permit does not allow a mixing zone, the CCEC equals 100% effluent.

Compliance with a chronic toxicity limit is measured by a chronic toxicity test comparing the test organism response in effluent diluted to the CCEC, to test organism response in nontoxic control water. TCG is in compliance with the chronic toxicity limit if there is no statistically significant difference in test organism response between the CCEC sample and the control sample.

L. Comparison of effluent limits with the previous permit issued on September 27, 2010

Table 13 Comparison of Effluent Limits

Parameter	Basis of Limit	Previous Effluent Limits: Outfall # 001		Proposed Effluent Limits: Outfall # 001	
		Average Monthly	Maximum Daily	Average Monthly	Maximum Daily
Flow	Technology	6.36	12.12	6.36	12.12
Total Suspended Solids, mg/L	Technology	30	100	30	100

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	Basis of Limit	Previous Effluent Limits: Outfall # 001		Proposed Effluent Limits: Outfall # 001	
Parameter		Average Monthly	Maximum Daily	Average Monthly	Maximum Daily
Oil and Grease, mg/L	Technology	15	20	15	20
Chromium, mg/L	Technology	0.20	0.20	0.20	0.20
Zinc, mg/L	Technology	1.0	1.0	1.0	1.0
Temperature, °C	Water Quality	17.5° C when background is less than 17.5° C. Background plus 0.3° C when background is greater than 17.5° C. no increase more than 28° C divided by background temperature plus 7.	17.5° C when background is less than 17.5° C. Background plus 0.3° C when background is greater than 17.5° C. no increase more than 28° C divided by background temperature plus 7.	7-DADMax 17.5 °C. When a water body's temperature is warmer than the criteria of 17.5°C, due to natural conditions, then human actions considered cumulatively may not cause the 7-DADMax temperature to increase more than 0.3°C. When the background condition of the water is cooler than 17.5°C, the allowable rate of warming up to, but not exceeding, the numeric criteria from human actions must not, at any time, exceed 28/(T+7).	
Oil and Grease, visual		No visible sheen	No visible sheen	No visible sheen	No visible sheen
Dissolved Oxygen, mg/L	Water Quality	Minimum, 8.0 mg/L	N/A	Lowest one-day minimum, 8.0 mg/L	
pH	Technology	6.0 – 9.0		6.0 - 9.0	
Total Chlorine Residual, ug/L	Water Quality	12.4	18.1	12.4	18.1
Chromium (Hex), ug/L	Water Quality	10.4	18.1	10.4	18.1
Copper, ug/L	Water Quality	8.9	13.1	8.9	13.1
Selenium, ug/L	Water Quality	5.6	8.2	5.6	8.2
¹ Mercury, ng/L	Water Quality	-	-	10	20

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	Basis of Limit	Previous Effluent Limits: Outfall # 001		Proposed Effluent Limits: Outfall # 001	
Parameter		Average Monthly	Maximum Daily	Average Monthly	Maximum Daily
Turbidity (NTU)	Water Quality	5 NTU over background when background is less than 50 NTU. Maximum 10% increase over background when background is over 50 NTU.	5 NTU over background when background is less than 50 NTU. Maximum 10% increase over background when background is over 50 NTU.	5 NTU over background when background is less than 50 NTU. Maximum 10% increase over background when background is over 50 NTU.	5 NTU over background when background is less than 50 NTU. Maximum 10% increase over background when background is over 50 NTU.
Priority Pollutants less chromium , copper, selenium and zinc, ug/L	Technology	Non- Detectable amount	Non- Detectable amount	Non- Detectable amount	Non- Detectable amount
FGD Effluent Limits (Outfall 003)					
Arsenic, ug/L	Technology	-	-	8.0	11.0
Mercury, ng/L	Technology	-	-	356	788
Nitrate/Nitrite, mg/L	Technology	-	-	4.4	17.0
Selenium, ug/L	Technology	-	-	12	23

	Basis of Limit	Previous Effluent Limits: Outfall # 002		Proposed Effluent Limits: Outfall # 002	
Parameter		Average Monthly	Maximum Daily	Average Monthly	Average weekly
Flow, MGD	Technology	0.020	0.036	None	None
Total Suspended Solids	Technology	30 mg/L	45 mg/L	30 mg/L, 9 lbs/day	45 mg/L, 13.5 lbs/day
BOD ₅	Technology	30 mg/L	45 mg/L	30 mg/L, 9 lbs/day	45 mg/L, 13.5 lbs/day
Parameter		Average Monthly	Maximum Daily	Average Monthly	Maximum Daily
Fecal Coliform #/100ml	Technology	200	400	200	400
Total Chlorine residual, mg/L	Technology	2.0	2.0	2.0	2.0

¹Effective date April 6, 2020.

IV. Monitoring Requirements

Ecology requires monitoring, recording, and reporting (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and that the discharge complies with the permit's effluent limits.

If a facility uses a contract laboratory to monitor wastewater, it must ensure that the laboratory uses the methods and meets or exceeds the method detection levels required by the permit. The permit describes when facilities may use alternative methods. It also describes what to do in certain situations when the laboratory encounters matrix effects. When a facility uses an alternative method as allowed by the permit, it must report the test method, detection level (DL), and quantitation level (QL) on the discharge monitoring report or in the required report.

A. Wastewater monitoring

The monitoring schedule is detailed in the proposed permit under Special Condition S.2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

B. Lab accreditation

Ecology requires that facilities must use a laboratory registered or accredited under the provisions of chapter 173-50 WAC, Accreditation of Environmental Laboratories, to prepare all monitoring data (with the exception of certain parameters). Ecology accredited the laboratory at this facility for pH, TSS, total residual chlorine, turbidity, fecal coliform and dissolved oxygen.

C. Effluent limits which are near detection or quantitation levels

The water quality-based effluent concentration limits for total residual chlorine (TRC) is near the limits of current analytical methods to detect or accurately quantify. The method detection level (MDL) also known as detection level (DL) is the minimum concentration of a pollutant that a laboratory can measure and report with a 99 percent confidence that its concentration is greater than zero (as determined by a specific laboratory method). The quantitation level (QL) is the level at which a

laboratory can reliably report concentrations with a specified level of error. Estimated concentrations are the values between the DL and the QL. Ecology requires permitted facilities to report estimated concentrations. When reporting maximum daily effluent concentrations, Ecology requires the facility to report “less than X” where X is the required detection level if the measured effluent concentration falls below the detection level.

V. Other Permit Conditions

A. Reporting and record keeping

Ecology based Special Condition S3 on its authority to specify any appropriate reporting and record keeping requirements to prevent and control waste discharges (WAC 173-220-210).

B. Non routine and unanticipated wastewater

Occasionally, this facility may generate wastewater which was not characterized in the permit application because it is not a routine discharge and was not anticipated at the time of application. These wastes typically consist of waters used to pressure-test storage tanks or fire water systems or of leaks from drinking water systems.

The permit authorizes the discharge of non-routine and unanticipated wastewater under certain conditions. The facility must characterize these waste waters for pollutants and examine the opportunities for reuse. Depending on the nature and extent of pollutants in this wastewater and on any opportunities for reuse, Ecology may:

- Authorize the facility to discharge the wastewater.
- Require the facility to treat the wastewater.
- Require the facility to reuse the wastewater.

C. Spill plan

This facility stores a quantity of chemicals on-site that have the potential to cause water pollution if accidentally released. Ecology can require a facility to develop best management plans to prevent this accidental release [Section 402(a)(1) of the Federal Water Pollution Control Act (FWPCA) and RCW 90.48.080].

TCG developed a plan for preventing the accidental release of pollutants to state waters and for minimizing damages if such a spill occurs. The proposed permit requires the facility to update this plan and submit it to Ecology.

D. Solid waste control plan

TCG could cause pollution of the waters of the state through inappropriate disposal of solid waste or through the release of leachate from solid waste.

This proposed permit requires this facility to update the approved solid waste control plan designed to prevent solid waste from causing pollution of waters of the state. The facility must submit the updated plan to Ecology for approval (RCW 90.48.080). You can obtain an Ecology guidance document, which describes how to develop a Solid Waste Control Plan, at: <http://www.ecy.wa.gov/pubs/0710024.pdf>

E. Operation and maintenance manual

Ecology requires industries to take all reasonable steps to properly operate and maintain their wastewater treatment system in accordance with state and federal regulations [40 CFR 122.41(e) and WAC 173-220-150 (1)(g)]. The facility has prepared and submitted an operation and maintenance

manual as required by state regulation for the construction of wastewater treatment facilities (WAC 173-240-150). Implementation of the procedures in the operation and maintenance manual ensures the facility's compliance with the terms and limits in the permit.

F. Compliance schedule

Ecology is proposing a compliance schedule for the Permittee to comply with surface water quality standards for mercury. The following table outlines the tasks and timelines that the Permittee needs to complete and meet water quality based limit for mercury.

Table 14: Water Quality Based mercury limits, compliance schedule

	Tasks	Date Due
1	Draft Wastewater Treatment Engineering Report Scope of Work	September 4, 2017
2	Final Wastewater Treatment Engineering Report Scope of Work	December 4, 2017
3	Draft Wastewater Treatment Engineering Report	November 5, 2018
4	Final Wastewater Treatment Engineering Report	April 8, 2019
5	Implement the Final Ecology Approved Wastewater Treatment Engineering Report/Plans/Specifications	January 24, 2020
6	Water Quality Permit Limit Effective (the Permit Limits are Shown in Appendix D)	April 6, 2020

G. General conditions

Ecology bases the standardized General Conditions on state and federal law and regulations. They are included in all individual industrial NPDES permits issued by Ecology.

VI. Permit Issuance Procedures

A. Permit modifications

Ecology may modify this permit to impose numerical limits, if necessary to comply with water quality standards for surface waters, with sediment quality standards, or with water quality standards for groundwater, after obtaining new information from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

Ecology may also modify this permit to comply with new or amended state or federal regulations.

B. Proposed permit Issuance

This proposed permit includes all statutory requirements for Ecology to authorize a wastewater discharge. The permit includes limits and conditions to protect human health and aquatic life, and the beneficial uses of waters of the state of Washington. Ecology proposes to issue this permit for a term of 5 years.

VII. REFERENCES FOR TEXT AND APPENDICES

Environmental Protection Agency (EPA)

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1991. *Technical Support Document for Water Quality-based Toxics Control*. EPA/505/2-90-001.
1988. *Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling*. USEPA Office of Water, Washington, D.C.
1985. *Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water*. EPA/600/6-85/002a.
1983. *Water Quality Standards Handbook*. USEPA Office of Water, Washington, D.C.
- Tsivoglou, E.C., and J.R. Wallace.
1972. *Characterization of Stream Reaeration Capacity*. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)
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(<https://fortress.wa.gov/ecy/publications/SummaryPages/92109.html>)
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(<https://fortress.wa.gov/ecy/publications/summarypages/1110073.html>)
- October 2010 (revised). *Water Quality Program Guidance Manual – Procedures to Implement the State's Temperature Standards through NPDES Permits*. Publication Number 06-10-100
(<https://fortress.wa.gov/ecy/publications/summarypages/0610100.html>)
- Laws and Regulations(<http://www.ecy.wa.gov/laws-rules/index.html>)
- Permit and Wastewater Related Information
(<http://www.ecy.wa.gov/programs/wq/permits/guidance.html>)
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- Wright, R.M., and A.J. McDonnell.
1979. *In-stream Deoxygenation Rate Prediction*. Journal Environmental Engineering Division, ASCE. 105(E2). (Cited in EPA 1985 op.cit.)

Appendix A--Public Involvement Information

Ecology proposes to issue a permit to TransAlta Centralia Generation, LLC. The permit includes wastewater discharge limits and other conditions. This fact sheet describes the facility and Ecology's reasons for requiring permit conditions.

Ecology placed a Public Notice of Application on June 14, 2016, and June 21, 2016, in *The Chronicle* to inform the public about the submitted application and to invite comment on the issuance of this permit.

Ecology will place a Public Notice of Draft on _____, in *The Chronicle* to inform the public and to invite comment on the proposed draft National Pollutant Discharge Elimination System permit and fact sheet.

The notice:

- Tells where copies of the draft Permit and Fact Sheet are available for public evaluation (a local public library, the closest Regional or Field Office, posted on our website).
- Offers to provide the documents in an alternate format to accommodate special needs.
- Urges people to submit their comments, in writing, before the end of the Comment Period
- Tells how to request a public hearing of comments about the proposed NPDES permit.
- Explains the next step(s) in the permitting process.

Ecology has published a document entitled *Frequently Asked Questions about Effective Public Commenting* which is available on our website at <https://fortress.wa.gov/ecy/publications/SummaryPages/0307023.html>.

You may obtain further information from Ecology by telephone, 360-407-6280, or by writing to the address listed below.

Water Quality Permit Coordinator
Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775

The primary author of this permit and fact sheet is Aziz Mahar, P.E.

Appendix B--Your Right to Appeal

You have a right to appeal this permit to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of the final permit. The appeal process is governed by chapter 43.21B RCW and chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2) (see glossary).

To appeal you must do the following within 30 days of the date of receipt of this permit:

- File your appeal and a copy of this permit with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this permit on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

You must also comply with other applicable requirements in chapter 43.21B RCW and chapter 371-08 WAC.

ADDRESS AND LOCATION INFORMATION

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive Southeast Lacey, WA 98503	Department of Ecology Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608
Pollution Control Hearings Board 1111 Israel Road Southwest, Suite 301 Tumwater, WA 98501	Pollution Control Hearings Board PO Box 40903 Olympia, WA 98504-0903

Appendix C--Glossary

1-DMax or 1-day maximum temperature -- The highest water temperature reached on any given day. This measure can be obtained using calibrated maximum/minimum thermometers or continuous monitoring probes having sampling intervals of thirty minutes or less.

7-DADMax or 7-day average of the daily maximum temperatures -- The arithmetic average of seven consecutive measures of daily maximum temperatures. The 7-DADMax for any individual day is calculated by averaging that day's daily maximum temperature with the daily maximum temperatures of the three days prior and the three days after that date.

Acute toxicity --The lethal effect of a compound on an organism that occurs in a short time period, usually 48 to 96 hours.

AKART -- The acronym for “all known, available, and reasonable methods of prevention, control and treatment.” AKART is a technology-based approach to limiting pollutants from wastewater discharges, which requires an engineering judgment and an economic judgment. AKART must be applied to all wastes and contaminants prior to entry into waters of the state in accordance with RCW 90.48.010 and 520, WAC 173-200-030(2)(c)(ii), and WAC 173-216-110(1)(a).

Alternate point of compliance -- An alternative location in the groundwater from the point of compliance where compliance with the groundwater standards is measured. It may be established in the groundwater at locations some distance from the discharge source, up to, but not exceeding the property boundary and is determined on a site specific basis following an AKART analysis. An “early warning value” must be used when an alternate point is established. An alternate point of compliance must be determined and approved in accordance with WAC 173-200-060(2).

Ambient water quality -- The existing environmental condition of the water in a receiving water body.

Ammonia -- Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Annual average design flow (AADF -- average of the daily flow volumes anticipated to occur over a calendar year.

Average monthly (intermittent) discharge limit-- The average of the measured values obtained over a calendar months' time taking into account zero discharge days.

Average monthly discharge limit -- The average of the measured values obtained over a calendar months' time.

Background water quality -- The concentrations of chemical, physical, biological or radiological constituents or other characteristics in or of groundwater at a particular point in time upgradient of an activity that has not been affected by that activity, [WAC 173-200-020(3)]. Background water quality for any parameter is statistically defined as the 95% upper tolerance interval with a 95% confidence based on at least eight hydraulically upgradient water quality samples. The eight samples are collected over a period of at least one year, with no more than one sample collected during any month in a single calendar year.

Best management practices (BMPs) -- Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the state. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD5 -- Determining the five-day Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD5 is used in modeling to measure the reduction of dissolved oxygen in receiving waters after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD₅ is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass -- The intentional diversion of waste streams from any portion of a treatment facility.

Categorical pretreatment standards -- National pretreatment standards specifying quantities or concentrations of pollutants or pollutant properties, which may be discharged to a POTW by existing or new industrial users in specific industrial subcategories.

Chlorine -- A chemical used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic toxicity -- The effect of a compound on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean water act (CWA -- The federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Compliance inspection-without sampling -- A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance inspection-with sampling -- A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations. In addition it includes as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Ecology may conduct additional sampling.

Composite sample -- A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite" (collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots).

Construction activity -- Clearing, grading, excavation, and any other activity, which disturbs the surface of the land. Such activities may include road building; construction of residential houses, office buildings, or industrial buildings; and demolition activity.

Continuous monitoring -- Uninterrupted, unless otherwise noted in the permit.

Critical condition -- The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Date of receipt -- This is defined in RCW 43.21B.001(2) as five business days after the date of mailing; or the date of actual receipt, when the actual receipt date can be proven by a preponderance of the evidence. The recipient's sworn affidavit or declaration indicating the date of receipt, which is unchallenged by the agency, constitutes sufficient evidence of actual receipt. The date of actual receipt, however, may not exceed forty-five days from the date of mailing.

Detection limit -- The minimum concentration of a substance that can be measured and reported with 99 percent confidence that the pollutant concentration is above zero and is determined from analysis of a sample in a given matrix containing the pollutant.

Dilution factor (DF) -- A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the percent effluent fraction, for example, a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Distribution uniformity -- The uniformity of infiltration (or application in the case of sprinkle or trickle irrigation) throughout the field expressed as a percent relating to the average depth infiltrated in the lowest one-quarter of the area to the average depth of water infiltrated.

Early warning value -- The concentration of a pollutant set in accordance with WAC 173-200-070 that is a percentage of an enforcement limit. It may be established in the effluent, groundwater, surface water, the vadose zone or within the treatment process. This value acts as a trigger to detect and respond to increasing contaminant concentrations prior to the degradation of a beneficial use.

Enforcement limit -- The concentration assigned to a contaminant in the groundwater at the point of compliance for the purpose of regulation, [WAC 173-200-020(11)]. This limit assures that a groundwater criterion will not be exceeded and that background water quality will be protected.

Engineering report -- A document that thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report must contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal coliform bacteria -- Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab sample -- A single sample or measurement taken at a specific time or over as short a period of time as is feasible.

Groundwater -- Water in a saturated zone or stratum beneath the surface of land or below a surface water body.

Industrial user -- A discharger of wastewater to the sanitary sewer that is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

Industrial wastewater -- Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business; from the development of any natural resource; or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated stormwater and, also, leachate from solid waste facilities.

Interference -- A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

- Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and
- Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource

Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Local limits -- Specific prohibitions or limits on pollutants or pollutant parameters developed by a POTW.

Major facility -- A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum daily discharge limit -- The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Maximum day design flow (MDDF) -- The largest volume of flow anticipated to occur during a one-day period, expressed as a daily average.

Maximum month design flow (MMDF) -- The largest volume of flow anticipated to occur during a continuous 30-day period, expressed as a daily average.

Maximum week design flow (MWDF) -- The largest volume of flow anticipated to occur during a continuous 7-day period, expressed as a daily average.

Method detection level (MDL) -- See Detection Limit.

Minor facility -- A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing zone -- An area that surrounds an effluent discharge within which water quality criteria may be exceeded. The permit specifies the area of the authorized mixing zone that Ecology defines following procedures outlined in state regulations (chapter 173-201A WAC).

National pollutant discharge elimination system (NPDES) -- The NPDES (Section 402 of the Clean Water Act) is the federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the state of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both state and federal laws.

pH -- The pH of a liquid measures its acidity or alkalinity. It is the negative logarithm of the hydrogen ion concentration. A pH of 7 is defined as neutral and large variations above or below this value are considered harmful to most aquatic life.

Pass-through -- A discharge which exits the POTW into waters of the State in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of State water quality standards.

Peak hour design flow (PHDF) -- The largest volume of flow anticipated to occur during a one-hour period, expressed as a daily or hourly average.

Peak instantaneous design flow (PIDF) -- The maximum anticipated instantaneous flow.

Point of compliance -- The location in the groundwater where the enforcement limit must not be exceeded and a facility must comply with the Ground Water Quality Standards. Ecology determines this limit on a site-specific basis. Ecology locates the point of compliance in the groundwater as near and directly downgradient from the pollutant source as technically, hydrogeologically, and geographically feasible, unless it approves an alternative point of compliance.

Potential significant industrial user (PSIU) --A potential significant industrial user is defined as an Industrial User that does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

- a. Exceeds 0.5 % of treatment plant design capacity criteria and discharges <25,000 gallons per day or;
- b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes). Ecology may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

Quantitation level (QL) -- Also known as Minimum Level of Quantitation (ML) – The lowest level at which the entire analytical system must give a recognizable signal and acceptable calibration point for the analyte. It is equivalent to the concentration of the lowest calibration standard, assuming that the lab has used all method-specified sample weights, volumes, and cleanup procedures. The QL is calculated by multiplying the MDL by 3.18 and rounding the result to the number nearest to (1,2,or 5) x 10ⁿ, where n is an integer. (64 FR 30417).
ALSO GIVEN AS:
The smallest detectable concentration of analyte greater than the Detection Limit (DL) where the accuracy (precision & bias) achieves the objectives of the intended purpose. (Report of the Federal Advisory Committee on Detection and Quantitation Approaches and Uses in Clean Water Act Programs Submitted to the US Environmental Protection Agency December 2007).

Reasonable potential -- A reasonable potential to cause a water quality violation, or loss of sensitive and/or important habitat.

Responsible corporate officer -- A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or have gross annual sales or expenditures exceeding \$25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures (40 CFR 122.22).

Sample Maximum -- No sample may exceed this value.

Significant industrial user (SIU) --

- 1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N and;
- 2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement [in accordance with 40 CFR 403.8(f)(6)].

Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

*The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

Slug discharge -- Any discharge of a non-routine, episodic nature, including but not limited to an accidental spill or a non-customary batch discharge to the POTW. This may include any pollutant released at a flow rate that may cause interference or pass through with the POTW or in any way violate the permit conditions or the POTW's regulations and local limits.

Soil scientist -- An individual who is registered as a Certified or Registered Professional Soil Scientist or as a Certified Professional Soil Specialist by the American Registry of Certified Professionals in Agronomy, Crops, and Soils or by the National Society of Consulting Scientists or who has the credentials for membership. Minimum requirements for eligibility are: possession of a baccalaureate, masters, or doctorate degree from a U.S. or Canadian institution with a minimum of 30 semester hours or 45 quarter hours professional core courses in agronomy, crops or soils, and have 5,3,or 1 years, respectively, of professional experience working in the area of agronomy, crops, or soils.

Solid waste -- All putrescible and non-putrescible solid and semisolid wastes including, but not limited to, garbage, rubbish, ashes, industrial wastes, swill, sewage sludge, demolition and construction wastes, abandoned vehicles or parts thereof, contaminated soils and contaminated dredged material, and recyclable materials.

Soluble BOD₅ -- Determining the soluble fraction of Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of soluble organic material present in an effluent that is utilized by bacteria. Although the soluble BOD₅ test is not specifically described in Standard Methods, filtering the raw sample through at least a 1.2 um filter prior to running the standard BOD₅ test is sufficient to remove the particulate organic fraction.

State waters -- Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a stormwater drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based effluent limit -- A permit limit based on the ability of a treatment method to reduce the pollutant.

Total coliform bacteria--A microbiological test, which detects and enumerates the total coliform group of bacteria in water samples.

Total dissolved solids--That portion of total solids in water or wastewater that passes through a specific filter.

Total maximum daily load (TMDL) --A determination of the amount of pollutant that a water body can receive and still meet water quality standards.

Total suspended solids (TSS) -- Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Upset -- An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limits because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error,

improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water quality-based effluent limit -- A limit imposed on the concentration of an effluent parameter to prevent the concentration of that parameter from exceeding its water quality criterion after discharge into receiving waters.

Appendix D--Technical Calculations

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found in the PermitCalc workbook on Ecology's webpage at: <http://www.ecy.wa.gov/programs/wq/permits/guidance.html>.

Simple Mixing:

Ecology uses simple mixing calculations to assess the impacts of certain conservative pollutants, such as the expected increase in fecal coliform bacteria at the edge of the chronic mixing zone boundary. Simple mixing uses a mass balance approach to proportionally distribute a pollutant load from a discharge into the authorized mixing zone. The approach assumes no decay or generation of the pollutant of concern within the mixing zone. The predicted concentration at the edge of a mixing zone (C_{mz}) is based on the following calculation:

$$C_{mz} = Ca + \frac{(Ce - Ca)}{DF}$$

where
:
Ce = Effluent Concentration
Ca = Ambient Concentration
DF = Dilution Factor

Reasonable Potential Analysis:

The spreadsheets Input 2 – Reasonable Potential, and LimitCalc in Ecology's PermitCalc Workbook determine reasonable potential (to violate the aquatic life and human health water quality standards) and calculate effluent limits. The process and formulas for determining reasonable potential and effluent limits in these spreadsheets are taken directly from the *Technical Support Document for Water Quality-based Toxics Control*, (EPA 505/2-90-001). The adjustment for autocorrelation is from EPA (1996a), and EPA (1996b).

Calculation of Water Quality-Based Effluent Limits:

Water quality-based effluent limits are calculated by the two-value wasteload allocation process as described on page 100 of the TSD (EPA, 1991) and shown below.

1. Calculate the acute wasteload allocation WLA_a by multiplying the acute criteria by the acute dilution factor and subtracting the background factor. Calculate the chronic wasteload allocation (WLA_c) by multiplying the chronic criteria by the chronic dilution factor and subtracting the background factor.

FACT SHEET FOR
 TRANSALTA CENTRALIA GENERATION LLC
 NPDES PERMIT WA0001546

Reasonable Potential Calculation										
Facility		TCG				Dilution Factors:				Acute Chronic
Water Body Type		Freshwater				Aquatic Life				10 10
Rec. Water Hardness		100 mg/L				Human Health Carcinogenic				10
						Human Health Non-Carcinogenic				10
Pollutant, CAS No. & NPDES Application Ref. No.		ANTIMONY (INORGANIC) 7440360 1M	ARSENIC (dissolved) 7440382 2M	CHROMIUM(HEX) 18540299	COPPER - 744058 6M Hardness dependent	MERCURY 7439976 8M	NICKEL - 7440020 9M - Dependent on hardness	SELENIUM 7782492 10M	ZINC- 7440666 13M hardness dependent	
Effluent Data	# of Samples (n)	4	4	11	29	3	2	29	37	
	Coeff of Variation (Cv)	0.6	0.6	0.6	0.67	0.6	0.6	0.6	1.07	
	Effluent Concentration, ug/L (Max. or 95th Percentile)	2	6.7	5.9	3.52	0.0564	133	3.76	13.6	
	Calculated 50th percentile Effluent Conc. (when n>10)				13			13		
Receiving Water Data	90th Percentile Conc., ug/L		0	0	0	0	0	0	0	
	Geo Mean, ug/L	0			0	0	0	0		
Water Quality Criteria	Aquatic Life Criteria, ug/L	Acute	- 360	15	17.016	2.1	1415.4064	20	114.45	
		Chronic	- 190	10	11.351	0.012	157.19223	5	104.51	
	WQ Criteria for Protection of Human Health, ug/L		14	-	- 1300	0.14	610	170	-	
	Metal Criteria Translator, decimal	Acute	- 1	0.982	0.996	0.85	0.998	- 0.996		
		Chronic	- 1	0.962	0.996	-	0.997	- 0.996		
	Carcinogen?		N	Y	N	N	N	N	N	
Aquatic Life Reasonable Potential										
Effluent percentile value		0.950	0.950	0.950	0.950	0.950	0.950	0.950		
s ² =ln(CV ² +1)		0.555	0.555	0.609	0.555	0.555	0.555	0.874		
Pn Pn=(1-confidence level) ^{1/n}		0.473	0.762	0.902	0.368	0.224	0.902	0.922		
Multiplier		2.59	1.68	1.00	3.00	3.79	1.00	1.00		
Max concentration (ug/L) at edge of...		Acute	17.321	9.722	3.506	0.144	5.037	3.760	13.546	
		Chronic	17.321	9.524	3.506	0.169	5.032	3.760	13.546	
Reasonable Potential? Limit Required?		NO	NO	NO	YES	NO	NO	NO		
Human Health Reasonable Potential										
s ² =ln(CV ² +1)		0.5545		0.6089	0.5545	0.5545	0.555			
Pn Pn=(1-confidence level) ^{1/n}		0.473		0.902	0.368	0.224	0.902			
Multiplier		10385		0.4553	12049	1524	973	0.488		
Dilution Factor		1		1	1	1	1			
Max Conc. at edge of Chronic Zone, ug/L		2.0769		13	6.8E-02	2.0E+00	13			
Reasonable Potential? Limit Required?		NO		NO	NO	NO	NO			

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Aquatic Life and Human Health Limits Calculations

Facility	TCG
Water Body Type	Freshwater
Rec. Water Hardness	100 mg/L

Dilution Factors:	Acute	Chronic
Aquatic Life	1.0	1.0
Human Health Carcinogenic		1.0
Human Health Non-Carcinogenic		1.0

Pollutant, CAS No. & NPDES Application Ref. No.		MERCURY 7439976 8M										
Effluent Data	Coeff of Variation (Cv)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Receiving Water Data	90th Percentile Conc., ug/L	0	0	0	0	0						
	Geo Mean, ug/L		0	0		0						
Water Quality Criteria	Aquatic Life Criteria, Acute ug/L	2.1										
	Chronic	0.012										
	WQ Criteria for Protection of Human Health, ug/L	0.14										
	Metal Criteria Acute	0.85										
	Translator, decimal	-										
	Carcinogen?	N										

Aquatic Life Limit Calculation

# of Compliance Samples Expected per month		4										
LTA Coeff. Var. (CV), decimal		0.6										
Permit Limit Coeff. Var. (CV), decimal		0.6										
Waste Load Allocations, ug/L	Acute	2.1										
	Chronic	0.012										
Long Term Averages, ug/L	Acute	0.674275										
	Chronic	0.006329										
Limiting LTA, ug/L		0.006329										
Metal Translator or 1?		1.00										
Average Monthly Limit (AML), ug/L		0.010										
Maximum Daily Limit (MDL), ug/L		0.020										

Appendix E--Response to Comments

[Ecology will complete this section after the public notice of draft period.]